



Caffeates as antioxidants in emulsions and the effect of tocopherols

Sørensen, Ann-Dorit Moltke; Durand, E.; Villeneuve, P.; Jacobsen, Charlotte

Publication date:
2013

Document Version
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

Citation (APA):
Sørensen, A-D. M., Durand, E., Villeneuve, P., & Jacobsen, C. (2013). *Caffeates as antioxidants in emulsions and the effect of tocopherols*. Abstract from 11th Euro Fed Lipid Congress, Antalya, Turkey.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Caffeates as antioxidants in emulsions and the effect of tocopherols

Ann-Dorit Moltke Sørensen¹, Erwann Durand², Pierre Villeneuve², Charlotte Jacobsen¹

¹Division of Industrial Food Research, National Food Institute, Technical University of Denmark, Kgs. Lyngby, Denmark

²UMR IATE CIRAD, Montpellier, France

Lipid oxidation is a major issue in foods containing LC PUFA. To protect these food products antioxidant addition can be a solution. Many food products are emulsions. According to the “polar paradox” hypothesis, polar compounds are more efficient as antioxidants in bulk oil, whereas lipophilic compounds are more efficient antioxidants in emulsions. Lately, extensive work has been performed on phenolipids and their antioxidant efficacy in emulsions. It was found that the “polar paradox” hypothesis was too simple to explain the observed efficacy of the phenolipids. The antioxidant efficacy increased with increasing length of the alkyl chain up to a certain length after which the efficacy decreased. Therefore, a new term, “cut-off effect”, was introduced to describe this behavior.

The aim of this study was to evaluate the antioxidative effect of caffeic acid and its ester C₁ – C₂₀, caffeates, in two different emulsion systems. In the first system we used stripped fish-rape seed oil (50:50) and for the second system we used non-stripped fish-rape seed oil (50:50) and for both systems Tween80 was used as emulsifier. Hence, the first system was without tocopherol and the second system was with tocopherols from the oil. Lipid oxidation was evaluated from three parameters measured over time: peroxide value (PV), secondary volatile oxidation products and tocopherol concentrations. The results demonstrate the efficacy of caffeates in simple emulsions. Furthermore, the two different emulsion systems reveal possible interactions between caffeates and tocopherols in simple emulsions.

Keywords: Caffeic acid, Caffeates, Lipid oxidation, Cut-off effect